Atlantic Technology 334SB

SUBWOOFER

Subwoofers have come a long way in many ways. One of the most significant is that it's not that long ago that I'd often have to explain what a subwoofer actually was to most people. These days, thanks to the over-whelming acceptance of multi-channel home theatre systems and the enthusiasm with which movie producers make sure there's plenty of low-frequency information pumped into the subwoofer (0.1 or LFE) channel, subwoofers have become part of the consumer lexicon. So most now not only know what a subwoofer is, they're happy to have one in their home. At the same time, subwoofers now perform better than they ever have. The advent of low-cost, high-power Class-D amplifiers has meant that subwoofer designers finally have all the amplifier power they need at their disposal at a reasonable cost, making it possible for small bass drivers, in relatively small cabinets, to deliver impressively loud—and impressively low—bass at affordable prices.

THE EQUIPMENT

Atlantic Technology's 334SB is the second-smallest subwoofer in its 'SB' range. It and the model below it (the 224SB) have 254mm-diameter bass drivers, while the two models above it, the 444SB and 642e (and no, I don't know who dreamed up those model numbers!) sport 305mm-diameter bass drivers. All models have internal power amplifiers whose outputs increase in steps from a claimed 180-watts for the 224SB to 350-watts for the 642e. While it's not immediately obvious from our photograph, the 334SB's enclosure is totally sealed. This means that there's no bass reflex port, so there's no possibility of unwanted 'chuffing' (noises from the port caused by air moving in and out) and also no possibility of small creatures (I recently heard of a pygmy possum having to be removed from a Paradigm speaker) making their home inside your subwoofer. The trapped air inside the cabinet also acts as a 'cushion' that helps protect the cone from being overdriven.

The bass driver is front-firing and, although it's rated by Atlantic Technology with a diameter of 254mm, that's actually the overall diameter of the entire basket. The more-important Thiele/Small diameter is 210mm, which gives an effective cone area (Sd) of 346cm². The cone is made from paper, as is the dished central dust cap. The surround suspension is rubber. Powering the cone is a 50mm-diameter aluminum voice coil, around which is wound four layers of copper coated aluminium wire that operates in the gap of a large centre-vented magnet.

The back plate of the Atlantic Technology is fairly bare, not least because it has only line-level inputs, not both line-level and speaker level. Similarly, there are only line-level outputs. The low-pass crossover control is continuous, via a small plastic rotary knob, and is marked '40Hz' at its lowest point, and '140Hz' at its highest. Alongside it is a 'crossover bypass' switch that actually looks like a bit of an afterthought, because additional

labelling appears to have been stuck on after the plate was first screen-printed—but it's no less welcome for being an afterthought! And at least it shows Atlantic Technology is prepared to make such changes to an existing production run, rather than just throwing in the towel and leaving a much-wanted update in the 'let's do it on the Mk II model' folder. The reason for including a proper crossover bypass is that it enables the 334SB to be connected to the LFE output of a THX-certified AV receiver and essentially conform with the THX standard (even though the subwoofer is not, itself, THX-certified). And if you don't have a THX AV receiver, but your receiver offers sophisticated crossover frequency and filtering options for the subwoofer (as most do these days), you can use these controls rather than the ones on the 334SB itself. (If you have two low-pass filters in circuit, the one in your AV receiver, plus the other in the subwoofer, it can mean that the overall filter slopes become too steep to allow proper integration of the subwoofer with the front and surround channels.)

Just to the right of the low-pass control is a two-position phase control (marked 'normal' and 'invert' rather than the more usual 0° and 180°) and to the right of this, a subsidiary power switch that allows you to select between 'auto' signal-sensing operation (the subwoofer switches itself on when it detects and audio signal, and switches itself off just as automatically when there hasn't been an audio signal for some time) and 'on' (this position forces the sub to be on all the time). Above this switch is a chameleon (multi-colour) LED that glows red when the subwoofer is powered-up, but in standby mode, and then changes colour to green when it's actually operating or out of standby mode.

If you've been reading carefully, you'll note that I haven't mentioned a volume control. This is because Atlantic Technology has very sensibly placed it on the front of the subwoofer, where it'll be easier to access if necessary, though you do have to remove the grille to do so, so it's not quite as easy as they make out in the glossy brochure. More about this volume control later. Underneath this control is a small LED that I assumed was supposed to 'mirror' the operation of the LED on the rear panel. I say 'assumed' because the LED on the front panel of my review sample didn't work at all, though the LED on the rear panel worked fine. Maybe a wire had worked loose…

The signal-sensing circuit on the 334SB turns the subwoofer on instantly, but (quite properly) has a very long turn-off delay (around ten minutes), so you won't be bothered by the sub switching itself on and off while you're listening to music or watching a movie. (And you always have the option of forcing it to stay on permanently, using the rear-panel switch I mentioned previously.)

One (added cost) option that is available for the 334SB, but which wasn't supplied to me, is Atlantic Technology's WA-50 Wireless Audio System. This is a transmitter system that allows you to send audio signals wirelessly from your amplifier or AV receiver to the 334SB, meaning that the only wire you'll need is a 240V power lead running from the wall socket to the subwoofer. Perhaps more importantly, using a WA-50 system makes it really easy to set up a multiple-subwoofer system (usually only two!). The primary reason for using two subwoofers is to 'smooth out' acoustic anomalies caused by the room (usually particular points in the room where there's too much bass, or too little)… but you could also use two subwoofers simply to get additional volume, should you decide that just one subwoofer is not enough! If you do this way, you should be aware that the signal to the subwoofer/s will be delayed a little (Atlantic says that for the WA-50, it's less than 10mS) but you should be able to compensate for

ATLANTIC TECHNOLOGY 334SB
Subwoofer

Brand: Atlantic Technology
Model: 334SB
Category: Powered Subwoofer
RRP: $1295
Warranty: Three Years
Distributor: Network Audio Visual Pty Ltd
Address: Unit 6B, 3–9 Kenneth Road
Manly Vale, NSW, 2093
☎ **(02) 9949 9349**
🖷 **(02) 9949 6972**
✉ **sales@networkav.com.au**
🖳 **www.networkav.com.au**

- Front-mounted volume control
- Wireless option (WA-50)
- Sealed cabinet

- Vinyl finish
- Volume control

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Atlantic Technology 334SB Subwoofer should continue on and read the LABORATORY REPORT published on the page 85. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Lab Report on page 85

this in your AV receiver's setup menu.

The Atlantic Technology 334SB stands 3840mm high, is 390mm wide and 417mm deep (my measurement is different to Atlantic Technology's specification because I've included not only the depth of the grille, but also the fact that you have to allow at least 32mm extra for the mains plug. I used a compact 90° angled one. A 'straight' plug would require even more depth). It weighs 16kg. The only available finish is a black vinyl (with a slightly stippled surface) that covers the front baffle, the top surface and the rear of the subwoofer. The sides are finished in a 'satin black' paint. (The top-line model in the SB range apparently is also available in a gloss black painted finish, but I haven't seen one.) For the record, I have to say that I wasn't overly keen on the vinyl finish, nor on the overall cosmetic design of the subwoofer: those 'scallops' on the side where the sides of the subwoofer curve up and arch away from the corner 'skirts' that hide the four rubber feet looked a bit twee to me. However, that's just my personal opinion and I generally find that most people place subwoofers where they're pretty much out of sight anyway! Since I'm having a whinge, I should also say that if you're looking at AT's promotional literature, you should have a salt-shaker handy, because the company regularly goes 'way over the top with hyperbole when promoting its products. Read its literature literally, for example, and you'd be forgiven for thinking that Atlantic Technology is the only subwoofer manufacturer that makes subwoofers approved for use with both 110V and 240V mains voltages! Another example is the outrageous claim that: "*other subwoofers, regardless of their power ratings or limiters, can't match the sound of an Atlantic subwoofer for detail and musical accuracy*." Mmmm…

IN USE AND LISTENING SESSIONS

There's also much nonsense published about positioning subwoofers, the most egregious of which is the advice that you should not place them in corners. In fact, this advice is wrong, because a corner is one of the very best places you can put a subwoofer! (You should not place either the left or right channel speakers in corners, which is probably how that furphy came about.) Probably the best way to work out the best position for your subwoofer is to place the subwoofer where your head would normally be when you're listening to music (and/or watching the screen). I appreciate this may mean some creative use of stacked milk crates and furniture, and the temporary moving-aside of a seat or couch, but it's worth it. Once the sub is in place, connect it to your system (you'll need a long extension lead, or one of those WA-50s I mentioned earlier), then start playing a DVD or CD with low bass. You can turn up the volume of the subwoofer higher than normal if you like. Then, crawl around the floor (no, I'm not joking) with some white electrical tape in your hand. As you move around, you'll hear the bass alternately get stronger and weaker. In some point of the room it might be so weak that you can barely hear it at all. Mark all the spots where the sound is strong by sticking some white tape to the carpet. Once you've covered the entire floor area, your carpet should be littered with bits of white tape. Now, if someone usually listens to music with you—or watches movies with you—move the subwoofer to where *their* head would be, and repeat the process, but this time listening only at the spots you've already taped. If the bass is still strong at a point, put another piece of tape crosswise across the first bit. When you've finished, you'll find that you can put the subwoofer anywhere there's a white cross on the floor and be assured of getting good bass at the listening position/s. Once the sub is in this position, it is only then that you should adjust the subwoofer's volume, low-pass and phase controls to fine-tune the sound at the listening position.

Atlantic Technology's little 334SB … not only delivered deep bass, but lots of it… and that bass is deep, solid, and very tight

Adjusting volume on the 334SB is supposed to be easy, because of the rotary control on the front, but in fact, having to remove the grille makes it a bit more inconvenient that it would seem. And you can't access it by 'pushing' through the cloth on the grille, because behind the cloth is a fairly solid plastic grid to prevent you doing this. When you do come to use the control, there's a 'click-stop' at the extreme left-most setting of the control that one would normally expect would turn the subwoofer off—or at least do something!—but in fact the click signifies nothing at all, and doesn't turn the subwoofer off, or to standby, but instead selects a preset volume level that's the equivalent of rotating the control to about the '10 o'clock' position. So, in order to ensure you start with the volume at minimum, you have to wind the control fully counter-clockwise until it 'clicks' and then 'unclick' it by winding it very slightly clockwise.

Anyway, enough of the preamble, because once I did have everything set up to my satisfaction, and started playing music (I started with the 334SB set-up with a pair of stereo speakers in a sub/sat configuration) it became clearly apparent very quickly that Atlantic Technology's little 334SB is a bit of a 'sleeper' because it not only delivered deep bass, but lots of it. And that bass is deep, solid, and *very* tight. I decided to start with a CD with such low bass that I knew it would provide a benchmark for later sessions, and sure enough, I found that the low-frequency levels on Telarc's Bachbusters (CD80123) were just a little down compared to my reference subwoofer (which is about four times the size and has double the cone area!), which I thought was an excellent result. Firing up my favourite 'bass' CD (a favourite not so much because the bass is really deep, but because I really like the music on it, which makes it fun to play when I'm 'working'), the 35Hz bass notes on *Joan of Arc* (from Jennifer Warnes' album of Leonard Cohen songs, 'Famous Blue Raincoat') was delivered at exactly the correct volume, and with a tone so pure that the impression that the sound was coming from the main speakers, and not the 334SB, was perfect. The sound was so good that I finished listening to the entire album, even though it wasn't entirely necessary, after which I pulled out an 'even bigger gun' in the shape of the first track of Dark Side of the Moon (on SACD this time) which chimes in at 27Hz. Again, the 334SB rose to the occasion, the only slight limitation being that if I turned the volume too high, I did run into the subwoofer's maximum output capability, with the end of the voice coil reaching its physical limit. Whether you'll experience the same limitation will depend on how loudly you play your music, what level you've set the sub for, the size of your room and whether or not you've positioned the subwoofer optimally, but my opinion is that in small to average-sized rooms, so long as you don't want the earth to move, the 334SB will provide sterling service. More sessions with the 334SB wired up via LFE to perform the low-frequency duties in a 5.1-channel home theatre system, using very small two-way satellite speakers as the main fronts and surrounds, more than proved its potential in this type of set-up. Indeed when watching movies, the sustained low-frequency sound effects (continuous rumblings *et al*) made the 334SB sound even more impressive than it does with music, such is the authenticity and quality of the bass at very low frequencies.

CONCLUSION

Atlantic Technology may have cut a few corners on the cosmetics, and included only the most basic inputs you'll need on a subwoofer, but since most people want to hide their subwoofers away anyway, and also require only basic inputs, this corner-cutting has enabled AT to deliver a small, impressively high-performance subwoofer at an impressively low price. ***greg borrowman***

LAB REPORT ON PAGE 85

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TEST RESULTS

With the low pass filter set to either bypass or 160Hz, the output of the 334SB peaks at 70–80Hz, whereas with the filter set to 40Hz, it peaks at 40Hz. The best indicator of the overall frequency response is Figure 2, which shows the Atlantic Technology 334SB's performance in a room, using pink noise as a test stimulus. You can see that below 200Hz, the 'Bypass' and '160Hz' traces are essentially identical. The slight increase in level apparent on the 160Hz trace at around 80–140Hz is no doubt due to the inevitable shoulder effect of the filter. Above 200Hz, the 'Bypass' trace rolls off only leisurely, whereas the 160Hz trace shows the effects of the low-pass filtering by rolling off at around 12dB/octave. The

The 334SB's frequency response, with the low-pass filter set to maximum (160Hz), extends from 26Hz to 220Hz ±3dB

frequency response with the low-pass filter set to 40Hz extends from 18Hz to 86Hz ±3dB. The frequency response, with the low-pass filter set to 160Hz, extends from 26Hz to 220Hz ±3dB. Without the filter, the high-frequency response extends to 360Hz within the same plus/minus decibel limits.

Figure 1 gives a better idea of the 334SB low-pass filter's crossover slope, because it's a near-field response using a sine stimulus. This test's inherent high-frequency limitations mean that the best trace to examine is the 40Hz (red) one, and this shows a very neat, clean 18dB/octave slope. There appears to be a minor driver/cabinet resonance at 160Hz, but it would be inaudible. Otherwise, the traces are very smooth (the 'glitch' at 100Hz on all the traces is caused by the lab's measuring instrument switching ranges, to improve its own accuracy). The fairly extended high-frequency response with the low-pass filter set to 160Hz indicates that you could very satisfactorily integrate this subwoofer with even the smallest pair of satellite/bookshelf speakers. Indeed the low-frequency response of the satellite speakers could roll off as high as 150Hz and the integration would be excellent. Since the response of most small bookshelf speakers will extend at least down to 120Hz, this will mean you'll have to 'back off' the low-pass filter on the 334SB a little to achieve an overall 'flat' response. Conversely, with the low-pass filter set to 40Hz, the 334SB will integrate almost-perfectly with most large floor-standing loudspeakers and extend response almost flat down to 30Hz, after which low-frequency response rolls off quite sharply.

Steve Holding

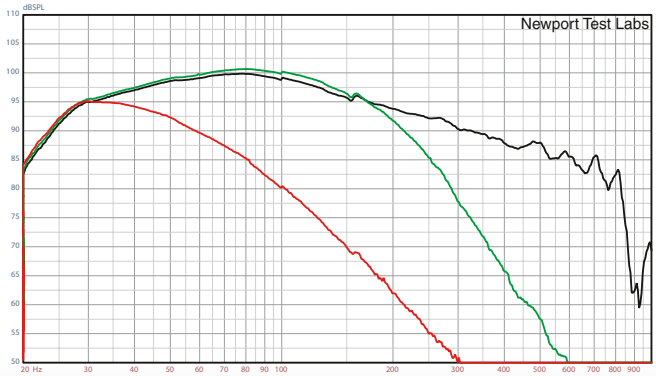

Figure 1: Nearfield sine frequency response of bass driver with crossover control set to 'Bypass' (Black Trace), 160Hz (Green Trace) and 40Hz (Red Trace). [Atlantic Tech 334SB]

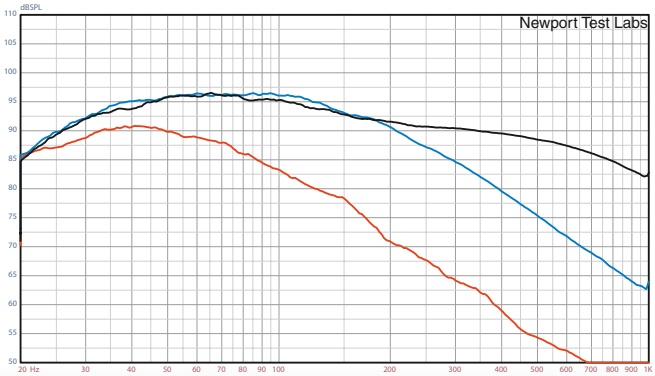

Figure 2: Frequency Response. Pink noise at 2M, with crossover control set to 'Bypass' (Black Trace), 160Hz (Blue Trace) and 40Hz (Red Trace). [Atlantic Technology 334SB]